Satisfaction with the Free Wireless Connection among Muslim University Students

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National Seminar on New Media and Islamic Issues, Challenges, and Opportunities

Organized by Department of Communication, Kulliyyah of Islamic Revealed Knowledge and Human Sciences (KIRKHS) in collaboration with Centre for Human Development and Applied Social Sciences (CERDAS)

26 September 2011

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Technological change in an organization gives impacts towards its members. In Islamic educational institutions, for example, International Islamic University Malaysia (IIUM), the introduction of a new technology affects students in many aspects. This study was conducted to investigate the impacts of a new technological implementation, the Free Wireless Connection (FWC), among Islamic Revealed Knowledge and Human Sciences (IRKHS) students. IRKHS, as the most populated faculty in IIUM, is divided into two main academic divisions, namely, Islamic Revealed Knowledge (IRK) and Human Sciences (HS). The main objective of this study is to see the patterns of technological adoption among Muslim students. The specific objectives are: (1) to find out the level of Internet and FWC usage among IIUM undergraduate students; (2) to find out the differences in adoption patterns of FWC in terms of gender, nationality, and academic division; (3) and to find out students' level of satisfaction towards the new technology. This study applied a survey research design. Descriptive and inferential statistics will be employed to answer the research objectives.

Keywords: satisfaction, Free Wireless Connection, technological change, adoption patterns, and Muslim students.

INTRODUCTION

Technological change has become the mode of operation in the 20th century business community. Managers and employees are naturally expected to adapt to the ever changing norms of technology. The goal of an organization adopting a technological innovation is to improve work process which is argued to improve work performance. Similar technology innovation is commonly happening in educational institution where staff, lecturers, and students face significant technological changes from time to time. Weick (1990) refers to innovation as something that lends itself to be misunderstood or misinterpreted by people. He stated that people's perception and interpretation on an innovation vary on individual basis. Weick stressed that people's perception and interpretation needs to be considered as contributing factors to their attitude towards an innovation. How an individual perceives the introduction of the technology is critical to whether the individual will eventually adopt and satisfy with the innovation. Taking these views as consideration, this study set to investigate students' level of satisfaction on technological implementation of the Free Wireless Connection (FWC) in International Islamic University of Malaysia (IIUM).

PROBLEM STATEMENT

In recent years, IIUM has implemented a number of both major and minor technological changes in the campus in order to provide the staff, lecturers, and students a better workplace. Many of the changes are focused on computerized technologies which include the installation of the latest Windows and protection software, providing more PCs in computer labs, improving the quality of Internet connection, and recently, introducing university's own wireless network.

However, some of these implementations have raised questions regarding their effectiveness, necessity, and their impact. For example, the implementation of monthly

payment wireless network in 2003 had faced several problems and delays. Students have raised issues such as poor signal reception and connection interruption. The implementation regarded to be unsuccessful when many registered students opted not to use the technology. Some of the mahallah (residential college) offices reported that many students tried to cancel their registration saying that it is not worth paying for the network with such quality.

Five years later, July 2008, IIUM formally introduced a Free Wireless Connection (FWC) network that promised to be in better quality and cost free. The new technological implementation plan triggers both positive and negative reactions among students. Registration technical problem, program installation failure, and slow connection speed were the common complaints during the early stage of the implementation. On the other hand, positive notes were also given by the students who appreciate the university's efforts to ease students' access to the Internet. Following the background and current interest towards the FWC, this study decided to investigate students' satisfaction towards the FWC implementation.

OBJECTIVES OF THE STUDY

The main objective of this study is to see the patterns of technological adoption among Muslim students. By choosing to investigate the latest implementation of new Free Wireless Connection (FWC) in IIUM, this study specifically aims to fulfil these objectives:

Objective 1: To find out students' Internet and FWC usage patterns among IIUM undergraduate students,

Objective 2: To find out the differences in adoption patterns of FWC in terms of gender, nationality, and academic division,

Objective 3: And to find out students' level of satisfaction towards the FWC implementation.

SIGNIFICANCE OF THE TUDY

Theoretically, this study aims to provide another reflection of the diffusion of innovations theory by exploring how organizational change works in the context of Islamic educational institution by investigating the impact of technological change on its Muslims members. It is to give another view on how adoption and satisfaction of Muslim students in a higher learning institution are affected by the implementation of a new technology.

The implication of this research may give contribution to educational institutions to help to understand students' concern and opinion towards organizational change planned by the institution. In this case, by knowing students' awareness, perception, attitude, adoption, and satisfaction, the institution may come out with a better plan before introducing any technological implementation. It may also help the institution to achieve better acceptance and avoid unnecessary resistance to the change.

LITERATURE REVIEW

In order to assess the concepts and to reach its objectives, this study has adopted the diffusion of innovation theory and referred to previous research done in the past.

THE THEORY

Diffusion of innovation model is the most widely tested and implemented model (Engel, Blackwell, & Miniard, 1995). It has been tested in two different context of study, namely, organization and society/public. The theory is also has been adapted into various technological innovations, especially on computerized technology. Although the model does not adequately provide a basis for predicting outcomes as well as providing guidance as to how to accelerate the rate of adoption, it is best applied to the socio-economic issues of information and communication technology in the social system (Minishi-Majanja & Kiplang'at, 2005).

The theory itself developed by Everett Rogers who defined the diffusion process as "... the spread of a new idea from its source of invention or creation to its ultimate users or adopters". He differentiates the adoption process from the diffusion process, in that the diffusion process occurs within society, as a group process; whereas, the adoption process pertains to an individual. Rogers later explained the adoption process as the mental process through which an individual passes from first hearing about an innovation to final adoption. Conklin (2006) added that it is a process through which a person starts from first knowledge of an innovation to forming an attitude towards the innovation, to a decision to adopt or reject, to implementation and use of the new idea, and to the confirmation of this decision.

Rogers' theory of the diffusion of innovations is an enduring conceptualization of innovation adoption behaviour. Although the overall theory is rich and complex, its essence

views the innovation adoption process as one of the information gathering and uncertainty reduction process (Fuller, Hardin & Davison, 2007).

TECHNOLOGICAL CHANGE

Organization technological change is defined "as modification or quality improvement of technology which involve work on organizational issues such as the structure, management systems and work on human resource areas, such as training and education" (Goldhaber, 1993: 34). Introducing new technology into a working environment needs a lot of considerations. It is difficult to predict how people will use new computerized services, how the new technology will affect established working practices, how user 'alienation' can be avoided or how the organization can assess the likely cost-benefit of introducing new technology.

Rosenberg and Holden (1998: 2) stated that organization technological change occurs when an organization changes its strategy for success, adds or removes a major section or practice, and attempts to change the nature of the organization by implementing a new technology. For organizations to develop, they often undergo significant change at various points in their development. The role of technology in the life of an organization determines the balance between the technology-oriented and people-oriented tasks in the organization. Widespread use of technology in real-life working environment has brought new challenges and opportunities for the organization to develop into a new level.

Wood (1999: 99) defined organization technological change as those new technology implementations which are increasingly restructuring organizational rationalization and social regulation, in the process to reconcile the tension between the need for working predictability and a flexible response to unpredictable working threats. In a working environment,

technology is only one of the informational resources available to users and can only be useful if it fits into the established working practices in the organization.

After reviewing the previous literature, this study partially adapts definition given by Goldhaber (1993) who defined organization technological change as modification or quality improvement of technology which involve work on organizational issues such as the structure and management systems.

FREE WIRELESS CONNECTION (FWC)

The Free Wireless Connection (FWC) has become the latest major technological implementation in IIUM which allows the students to connect to the Internet easily. FWC is a free-of-charge services which can only be accessed through laptop/notebook. The FWC was formally introduced in a launching workshop in July, 2008. It was then followed by several registration campaign and user-training workshops within the first month of the implementation.

According to the officers of IIUM IT Division, the FWC is not the first wireless Internet connection technology in IIUM. Earlier, the university has implemented monthly-payment wireless Internet access in 2004 which was designed for personal computer in student residential area. However, the implementation was unsuccessful because students complained on the quality of the connection. As a result, students decided to cancel their registration to the service. Later, IIUM introduced IIUM community wireless access which is designed for students who want to access the Internet in certain campus areas. The implementation proven to be more successful than the previous system and received more positive responses from the students.

The FWC was then implemented to ease the students to gain access to the Internet, to provide faster and free-interruption connection, to widen the area coverage of the service, as

well as to personalize the connection usage where students are required to register their own laptop together with personal data. Therefore, considering the background of the technology, this study decided to investigate how the implementation of the FWC influence the students' satisfaction towards the FWC.

SATISFACTION

Schneider and Bartlett (1970: 54) defined satisfaction as a personal evaluation of a system's practices and procedures. They added that people within this system will tend to agree less on their satisfaction than on their description of the system. During the process of an innovation, satisfaction level indicates the successfulness of the implementation. Other than perception and attitude, the level of satisfaction plays a vital role in acceptance or rejection of an innovation (Rogers, 2003).

In recent years, many researchers measured the degree of satisfaction in relation to technology innovation and its adoption. Individual's evaluation on the innovation's benefits plays a significant role in determining acceptance factors and new adopters' behavior regarding new information technologies (Malhotra & Galletta, 1999). Bill (2003) found that both satisfaction levels and feelings of expertise were positively related to the user's perception of having control of the environment pertaining to interfacing with the technology.

In addition, Smith (2004) stated that users' perceived benefits on a new technology have a positive effect on the users' attitudes toward accepting the technology, which consequently triggers satisfaction. Meanwhile, Haab (2007) focused her study on the significance of individuals' satisfaction towards technological implementation. She measured the level of satisfaction and related it with gender, experience, role, and type of institution. She found that only individuals' experience with the technology relates to their level of satisfaction.

RELATED RESEARCH

Almobarraz (2007) argued that many studies have employed diffusion of innovations theories to study community members' acceptance of technology innovations. Researchers in a number of disciplines have used this theory to comprehend the factors influencing people to accept or reject technologies. Diffusion of innovation theory has spread all around the world because it offers a conceptual framework for discussing the process of acceptance at a global level (Dillon & Morris, 1996). The theory form a general framework of the social impact of technologies on community and it provides insight into the characteristics of technology that may influence specific groups to adopt them.

Almobarraz (2007) who adopted the theory in the educational organization context, believed that information about the existence of an innovation, as well as its characteristics and features, flows through the social system within which adopters are situated. He examined that potential adopters engaged in information seeking behaviours to learn about the expected consequences of using the innovation. An assessment and evaluation of this information manifests itself in the form of beliefs about the innovation, and is then a proximal antecedent of adoption behaviour (Agarwal & Prasad, 1998). The theory also contains predictions regarding the spread of an innovation through a social system which led the researchers to test and apply the theory in different contexts.

Surry and Farquhar (1997) categorized diffusion of innovation applications into two groups. The first category focuses on the reform and restructuring of educational institutions. The goal of this category is to develop theories of organizational change. These theories involve the adoption of a wide range of innovative technologies and practices. This group is called macro theories. Micro theories are the second category that focuses on increasing the adoption and utilization of specific instructional products. The goal of this category is to

develop theories of technology adoption that will lead to a more widespread use of instructional innovations.

HYPOTHESES

Based on the literature review several hypotheses are generated:

Hypothesis 1: There are differences on the FWC usage based on gender, nationality, and academic division.

SH 1.1: The male students use the FWC more than the female students.

SH 1.2: The international students use the FWC more than the Malaysian students.

SH 1.3: The HS students use the FWC more than the IRK students.

Hypothesis 2: There are significant differences on the level of satisfaction based on gender, nationality, and academic division.

SH 2.1: The male students have higher level of satisfaction than the female students.

SH 2.2: The Malaysian students have higher level of satisfaction than the international students.

SH 2.3: The IRK students have higher level of satisfaction than the HS students.

RESEARCH METHODOLOGY

LOCALE OF THE STUDY

This study is conducted in International Islamic University of Malaysia (IIUM) main campus Gombak, Selangor. IIUM is a private publicly-funded university sponsored by eight different governments from the Organization of the Islamic Conference (OIC). Although the university was founded on Islamic principles, currently, it admits non-Muslim students as well. Approximately 3,000 students enroll each year. As of 2008, there were approximately 30,000 students from over 100 countries studying in IIUM. As such, IIUM is recognized by OIC countries as an institution that produces many international graduates.

In recent years, IIUM has rapidly tried to improve its quality by implementing some major changes on facilities and technologies due to its goal of becoming a research-based university. The Free Wireless Connection (FWC) is the latest technological improvement installed by IIUM which attracted huge attention from the students due to its promising benefits. With this background, this study chose the implementation of FWC as the main focus of the research by investigating its impact on students' satisfaction.

RESEARCH DESIGN

This study adopts survey research design in order to gather data from the respondents. The study used self-administered questionnaire distributed among students. According to Wimmer and Dominick (1997), survey research has a certain well-defined advantages, such as, able to investigate problems in realistic settings, reasonable cost, and relatively an easy way to obtain large amount of data. However, this research design carries potential disadvantages, such as, the inability to manipulate independent variable (as in laboratory experiment), inappropriate wording which may cause bias results, and difficulty in finding

the addressed sample. Despite these disadvantages, this design seems to be the most appropriate method to carry out the study since it is proven reliable for data gathering.

As for the data collection, this study distributed the questionnaire in IIUM main campus areas, such as, classes, library, and canteens. Each respondent was directly approached and given the same set of questionnaire. The data collection was held during Semester 2, 2008/2009 after the pre-testing of the research instrument had been conducted.

SAMPLING PROCEDURE

This study applied stratified random sampling procedure together with simple random sampling in order to collect data from the sampling frame. According to Wimmer and Dominick (1997), a stratified sample is the approach used when adequate representation of a sub-sample (strata or segment) is desired. This procedure requires a sample to be drawn from a homogenous subset of the population with similar characteristics. The characteristics of the sub-sample may include almost any variable. As for this study, the sub-sample characteristics are gender, nationality, and academic division.

The reason for adopting stratified sampling procedure is because it ensures the proper representation of the stratification variables to enhance representation of other variables related to them. Wimmer and Dominick (1997) said that a stratified sample is likely to be more representative on a number of variables than a simple random sample. As stated by the same authors, stratified sampling possesses several disadvantages too. The procedure can be costly and time-consuming, difficulty to find a sample if incidence is low, the variables that define strata may not be relevant, and knowledge of the population prior to selection is required.

Following proportionate stratified sampling, this study followed the procedure by selecting the undergraduate students based on three demographic characteristics, namely,

gender, nationality, and academic division. Other than male and female categorization, the samples are also classified based on their nationalities which are narrowed down into two categories, Malaysian and international students. Lastly, students from IRKHS, as the most populated kulliyyah in IIUM, are classified based on their distinctive academic divisions, namely, Islamic Revealed Knowledge (IRK) and Human Sciences (HS). The number of students selected from each category is based on the actual size of the population. With this, the respondents of the study reflect the proportion of the whole population. The application of simple random sampling gives equal chance for the students from each category to be selected.

SAMPLE SIZE

As for the sample size, the study investigated 300 undergraduate students from IRKHS as it is the most populated Kulliyyah to represent the IIUM population. Because of cost, inaccessibility and time constraints, it is impossible to test all members of the population. Therefore, samples are randomly drawn from the population for testing purposes, and statistics are computed so that the results can be generalized to the larger population. An estimate of the number of subjects or observations needed in a study is important to researchers to avoid discarding an effective intervention (Lunsford & Lunsford, 1995).

Following sample calculation technique developed by most researchers (such as Cochran's, 1977), this study used a small portion of the total population, and attempts to generalize the results and conclusions for the entire population. Many studies do not achieve their intended purposes because the researcher is unable to enrol enough subjects and therefore, consideration should be given to attainable sample size (Bartlett, 2001). Without some idea of how large a difference is to be detected, how much variation is present and what risks are to be tolerated, the best alternative is to take as large sample as possible (Kotrlik,

2001). Considering the views and calculations, therefore, the study targeted 300 respondents which are considerably large enough to represent the population.

RESPONDENTS OF THE STUDY

After the process of stratification, the proportions for sample size of each stratification that correspond to the actual size of the population in IRKHS kulliyyah, are based on official data retrieved from IIUM Admissions and Records (A&R) on January 12, 2009. In total of 300 respondents participating in the study, one-third of the students are majoring in IRK division (n=100) and two-third of the students are majoring in HS division (n=200). Pertaining to their gender, 25% are male students (n=75) and 75% are females (n=225). As for the nationality, most of the respondents are Malaysians (n=236) and the rest are International students (n=64) who come from 14 different countries.

Table 1
Stratifications of the Sample

Division	Gender	Malaysian	International	Total
IRK	Male	20	5	25
	Female	60	15	75
	Total	80	20	100
HS	Male	33	17	50
	Female	123	27	150
	Total	156	44	200

Beside the three stratifications mentioned above, other characteristics data were collected in order to gather more detail information for the respondents' profile. Majority of the respondents are in the age group between 20 to 23 years old (83.8%) which is the common age for undergraduate students. Almost half of the respondents (46.7%) are second year students, followed by third (30.7%), fourth (16.0%) and first year students (6.6%). The

respondents are dominated by sponsored students (N=214) and the rest are self-sponsored (N=86).

Pertaining to monthly allowance and expenditure, half of the respondents (51.2%) receive RM301-RM600 a month and it is equalled by their expenditure where half of the respondents (51%) spend RM301-RM600 a month.

Table 2
Profile of the Respondents

Chracterisics of the Respondents	Frequency	Percentage
Age		
<20	8	2.8
20-23	247	83.8
24-27	39	13.1
>28	1	0.3
Total	**295**	**100.0**
Year of study		
1st year	20	6.6
2nd year	140	46.7
3rd year	92	30.7
4th year	48	16.0
Total	**300**	**100.0**
Sponsorship		
Sponsored	214	71.3
Self-sponsored	86	28.7
Total	**300**	**100.0**
Monthly allowance		
<RM300	100	34.1
RM301-RM600	150	51.2
RM601-RM900	18	6.1
>RM900	25	8.6
Total	**293**	**100.0**
Monthly expenditure		
<RM300	98	33.8
RM301-RM600	148	51.0
RM601-RM900	35	12.1
>RM900	9	3.1
Total	**290**	**100.0**

DATA ANALYSIS

The data collected were keyed-in into SPSS version 16 after being coded according to its master code. Analysis both involved descriptive and inferential statistics. The descriptive analysis is used to describe demographic information of the respondents involved in the research. It is also applied to analyze the data for the first objective of the study, namely, the Internet and FWC usage patterns. Additionally, the reliability test was used to check the reliability of the items used to measure satisfaction (0.921). T-test was applied to answer the other objectives of the study which is to identify differences on the level of satisfaction based on selected demographic characteristics. As for the hypothesis testing, T-test was used to test all main hypotheses including their sub-hypotheses.

LIMITATIONS OF THE STUDY

This study gains timing advantage because the data were collected early after the technology has been implemented. Within the first few months of the innovation, the respondents are still having huge interest on the technology, and with this, they are willing to respond attentively (Alshawi, 2002; Al-Saif, 2005; Busselle et al., 1999). However, the short period of experience with the technology may affect the level of students' satisfaction. It means, individuals with less experience are most likely to be less aware, adopt, and satisfy with the new technology. Therefore, this study is limited by its short period of time in collecting data. Different findings might be found if the study is conducted much later after the implementation, for instance, one year after the implementation. Rogers (1995) said that there are differences between early adopters and late adopters on their perceptive of attributes regarding an innovation.

Even though the study reflects IRKHS population, yet it does not represent the whole population in the university. The impact of the FWC on satisfaction may vary for students

coming from different academic discipline. Previous researchers (Abdelraheem & Al Musawi, 2003; Almobarraz, 2007; Lazinger, Barllan, & Peritz, 1997) found that science students showed higher computer and Internet use than humanities and social science faculty members. In addition, the findings may not be the same if the same study is to be conducted among postgraduate students who may or may not use the FWC in the same intensity. Al-Asmari (2005) found that individuals' experience of using the technology relates to their level of satisfaction. On more general view, the results do not necessarily reflect phenomena in all higher learning institutions in Malaysia.

FINDINGS

INTERNET AND FREE WIRELESS CONNECTION USAGE PATTERNS

The first objective of the study is to find out usage patterns of the Internet and the Free Wireless Connection among IIUM undergraduate students. It covers information such as, computer/laptop ownership, Internet and FWC registration, usage level, reasons for using the Internet, benefits of the FWC, and problems faced while using the Internet and the FWC.

INTERNET USAGE

As shown in Table 4.1, most of the respondents own at least one personal computer (82.7%) on campus. Among these computer owners, more than a half of them (54.8%) have their computer connected to the Internet and the rest are not (45.2%). Pertaining to the experience of using the Internet, more than one-third of the respondents (36.3%) have been using the Internet for more than six years, whereby only 13.5% of them have less than a year experience.

Table 3
Respondents' Internet Usage

Internet Related Variables	Frequency	Percentage
Computer Ownership (N=300)		
Yes	248	82.7
No	52	17.3
Total	**300**	**100.0**
Connected to Internet (N=248)		
Yes	136	54.8
No	112	45.2
Total	**248**	**100.0**
Experience of Using Internet (N=299)		
Less than 1 year	40	13.5
1-3 years	84	28.5
4-6 years	64	21.7
More than 6 years	107	36.3
Total	**299**	**100.0**
Method of Accessing Internet (N=299)		
Own PC / Laptop	129	43.1
Cyber Café	107	35.8
Computer lab	54	18.1
Others	9	3.0
Total	**299**	**100.0**

Time of Accessing Internet (N=300)		
Morning	55	18.3
Afternoon	44	14.7
Evening	69	23.0
Night	32	44.0
Total	**300**	**100.0**
Frequency of Use per day (N=297)		
1 time	115	38.7
2 times	105	35.4
3 times	47	15.8
4 times	23	7.7
5 times	7	2.4
Total	**297**	**100.0**
M= 1.99, SD=1.03		
Time Spent per Use (N=298)		
Less than 60 minutes	17	5.7
60-180 minutes	237	79.5
181-300 minutes	33	11.1
More than 300 minutes	11	3.7
M=273.34		
Total	**298**	**100.0**
Purpose of Using Internet (N=300)		
Seeking Information	191	63.7
Academic Purposes	60	20.0
Socializing and Communicating	28	9.3
Leisure and Entertainment	21	7.0
Total	**300**	**100.0**
Internet Expenditure (N=300)		
Less than RM100	237	80.3
RM101-RM300	48	16.3
RM301-RM500	4	1.4
Above RM500	6	2.0
Total	**300**	**100.0**
M= 88.92		

The results also show that 43.1% (n=129) of the respondents usually access the Internet through their own personal computer, whereas 35.8% (n=107) of them access the Internet through cyber café and computer lab (18.1%). Regarding time to access the Internet, less than a half of the respondents (44.0%) access the Internet at night followed by evening (23.0%), morning (18.3%), and afternoon (14.7%).

On the frequency and time spent on the Internet, the respondents usually access the Internet once (38.7%) or twice (35.4%) in a day (M= 1.99, SD= 1.03). Many of the respondents (79.5%) reported spending between 1 to 3 hours each time they access the Internet. A small number of respondents reported accessing the Internet five times a day (2.4%) and spending five hours each time of access (3.7%). On the average, everyday the

respondents spend around four and a half hour per day on the Internet (M=273.34 minutes/day).

Less than two-thirds of the respondents (63.7%) used the Internet to seek information which generally covers news reading. Whereas 20.0% of them used the Internet for academic purposes, such as, completing assignments and gathering extra notes. Meanwhile, leisure and entertainment are the least popular reason reported for using the Internet (7.0%).

As for the monthly expenditure on the Internet, results show that majority of the respondents (80.3%) spent less than RM100.00 each month on the Internet and 16.3% of them spent between RM101.00-RM300.00 Meanwhile, only 3.4% (n= 10) of the respondents spent more than RM300.00 On the average, the results show that the respondents spent around RM88.92 each month on the Internet.

The results indicate that most of the students own personal computer (PC), however, only half of the computer owners have their computer connected to the Internet. Regarding their experience, majority of the students have been using the Internet for more than a year. Many of them receive the Internet access through their own PC or laptop, and prefer to access it at night. As for their level of use, many of them access the Internet once or twice a day in which they spend four and a half hour for each access. There are also minority who are considered as high level of Internet users. On the average, they are considerably regarded as medium level Internet users.

Within five years since Internet access became widely available, approximately 136 million individuals in the United States and Canada have begun to use the Internet regularly (Wieser, 2001). Young (1998) reported that majority of her respondents (mostly young adults) spent around five and a half hours a day on the Internet. Meanwhile, Hamilton and Kalb (1995) stated three percent of on-line users have serious Internet addiction, spending

most of their waking hours surfing and chatting with others. The rate of Internet use will constantly increase together with the fast advancing technology (Almobarraz, 2007).

Concerning the purpose of use, the students mainly use the Internet to seek information such as reading news. Surprisingly, only a few of them use the Internet to communicate or to seek entertainment. Lastly, with the average of RM88.92 per month, the students are regarded spending high expenditure on the Internet considering the availability of free Internet access in many areas in the campus.

Regarding the purpose of use, the Internet can be the method for providing learners the information they need at a place and time they need it (Reed, 2001). Reed (2001) also explained that the Internet hold significant role among teachers and students by providing them easy method of acquiring information whether it is academic related information or not.

FREE WIRELESS CONNECTION USAGE

Table 4.2 shows that most of the respondents own at least one laptop (80.0%). Among the laptop owners, more than a half of them (58.0%) have their laptop registered to the Free Wireless Connection. However, more respondents (54.5%) access the FWC through other's laptop rather than their own laptop (45.5%).

Pertaining to their experience of using the IIUM Free Wireless Connection, about two-thirds of the respondents (66.4%) have used the FWC for three months or less. Whereas, one-third of them (33.6%) have been using the FWC for four months or more. In terms of frequency and time spent on the FWC, majority of the respondents (80.0%) use the services once or twice a day. Majority of the users (80.7%) spend approximately 3 and half hours a day. The results also indicate that 42.4% (n=126) of the respondents usually access the FWC at night.

Regarding the area of accessing the FWC, less than half of the respondents (48.5%) access the FWC from mahallah areas which cover students' rooms, mahallah canteens, TV rooms, and mahallah offices. Other popular areas to access the service are the café/canteen in the kulliyyah areas (27.9%).

Table 4
Respondents' Free Wireless Connection Usage

FWC Related Variables	Frequency	Percentage
Laptop (N=300)		
Yes	240	80.0
No	60	20.0
Total	**300**	**100.0**
Registered to FWC (N=240)		
Yes	140	58.0
No	100	42.0
Total	**240**	**100.0**
Method of Accessing FWC (N=299)		
Own Laptop	136	45.5
Other's Laptop	163	54.5
Total	**299**	**100.0**
Experience (N=294)		
Less than 1 Month	88	33.4
1-3 Months	97	33.0
4-6 Months	56	19.0
More than 6 Months	43	14.6
Total	**294**	**100.0**
Frequency of Use per Day (N=271)		
1 time	147	54.2
2 times	70	25.8
3 times	33	12.2
4 times	14	5.2
5 times	7	2.6
Total	**271**	**100.0**
M= 1.76, SD= 1.02		
Time Spent per Use (N=269)		
Less than 60 minutes	27	10.0
60-180 minutes	217	80.7
181-300 minutes	21	7.8
More than 300 minutes	4	1.5
Total	**269**	**100.0**
Time of Accessing FWC (N=300)		
Morning	44	14.8
Afternoon	68	22.9
Evening	59	19.9
Night	126	42.4
Total	**300**	**100.0**

Area of Accessing FWC (N=297)		
Mahallah Area	144	48.5
Cafe/Canteen	83	27.9
Kulliyyah Facilities	52	17.5
Library	5	3.7
Mosque/Musolla	2	1.7
Others	11	0.7
Total	**297**	**100.0**

The respondents were also asked about the benefits and problems faced while using the Free Wireless Connection. Table 4.3 shows that more than two-thirds of the respondents (68.8%) agreed that free of charge as the main benefit of using the service, followed by benefits such as accessible anytime (45.3%), accessible anywhere (34.2%), and excellent connection (13.4%). Meanwhile, the respondents have indicated three main problems faced while using the FWC, namely, weak connection line (57.0%), connection interruption (53.0%), and limited area availability (52.3%).

Table 5
Benefits and Problems of Using Free Wireless Connection

FWC Related Variables	Frequency	Percentage
Benefits of Using FWC (N=298)		
Accessible Anytime	135	45.3
Accessible Anywhere	102	34.2
Free of Charge	205	68.8
Excellent Connection	40	13.4
		*Multiple responses
Problems of Using FWC (N=300)		
Registration Complexity	110	36.7
Connection Interruption	159	53.0
Weak Connection Line	171	57.0
Limited Area Availability	157	52.3
Others	4	1.3
		* Multiple responses

The results indicate that majority of the students own laptop and more than a half of the laptop owners have their laptop registered to the Free Wireless Connection. However,

more respondents access the FWC through other's laptop rather than their own. Regarding their experience on the FWC, many of the students have only three months or less experience. It is considered as moderate experience, since the FWC has been implemented only eight months before the study was conducted.

As for their level of use, majority of the students use the FWC once or twice a day with the average of three and a half hours for each access. This is considerably moderate use of the FWC. Many of them prefer to access the FWC at night in the mahallah areas such as student rooms.

Regarding benefits and problems of using the FWC, free-of-charge was indicated as the only main benefit, whereby weak connection line, connection interruption, and limited area availability were found to be main problems of FWC. The results suggest that the FWC need to be improved in some major technical areas.

Determination of technology usage can be characterized by both the rate of usage and the variety of ways in which the technology is used (Dutton, Kovaric & Steinfield, 1985). While usage variety may be driven by available features and interaction situations, usage rate depends on the users' task requirements (Shih & Venkatesh, 2003). It means students FWC adoption depends on how the features available on the FWC benefit their life as students, academic or non-academic.

Adopting new innovations is one of the major areas in information technology that has been researched extensively in order to determine the primary factors influencing people to accept technologies and implement them in their activities (Almobarraz, 2007). Dillon and Morris (1996) stated that user acceptance towards new technology is dependent on the demonstrable willingness within a user group to employ the technology for the task it is designed to support. Again, students' acceptance towards the FWC is dependent on how they think the FWC would benefit them regardless of their academic activities or daily life

activities. Shin and Venkatesh (2003) added that people give more attention in order to understand how the new technology will be used by the community members and how they interact with other technologies.

FWC USAGE BASED ON GENDER, NATIONALITY, AND ACADEMIC DIVISION

As shown in Table 4.11, the results indicate that there are no significant differences on the FWC usage based on the respondents' gender (t=-0.220, p=0.826), nationality (t=0.748, p=0.455), and academic division (t=-0.693, p=0.489). Both male (M=3.37) and female (M=3.50), Malaysian (M=3.57) and International (M=3.10), and IRK (M=3.24) and HS (M=3.61) respondents are using the FWC in a moderate amount of time. Moderate level of Internet users are those who use the Internet between three to five hours a day (Donohoe, 2007).

Table 4.11
FWC Usage between Gender, Nationality, and Academic Division

FWC Usage		N	M	SD	t	df	p
Gender	Male	64	3.37	3.55	-0.220	267	0.826
	Female	205	3.50	4.36			
Nationality	Malaysian	213	3.57	4.41	0.748	267	0.455
	International	56	3.10	3.15			
Division	IRK	97	3.24	0.49	-0.693	267	0.489
	HS	172	3.61	0.46			

The findings indicate that there are no significant differences on the students' FWC usage based on their gender, nationality, and academic division. It means that these demographic characteristics do not determine students' frequency and time spent of using the FWC. Therefore, both main hypothesis and sub-hypotheses are not supported.

These findings are similar with some previous research (Abdelraheem & Almusawi, 2003; Almobarraz, 2007; Anduwa-Ogiegbaen & Isah, 2005; Weiser, 2000). They all found that there is no difference between male and female in term of Internet usage. They argued

that male and female respondents in the same occupational background, such as students, tend to use the Internet on the same rate. They believed that this is caused by the similarities in task for both male and female students in the academic environment. In addition, Almobarraz (2007) also found that there is no difference between nationalities in term of Internet usage. He added that English proficiency which relate to the respondents' nationality does not determine their Internet usage rate.

On the other hand, the findings of this study contradict Smith's (2004), Conklin's (2006), and Donohoe's (2007) studies who found that there are significant differences between the respondents' demographic characteristics, such as gender, regarding their Internet and computer usage. They found that male significantly use the Internet more than female.

LEVEL OF SATISFACTION

The level of satisfaction reflects the respondents satisfaction towards issues related to the implementation of the Free Wireless Connection. As shown in Table 4.8, seven in ten of the respondents are satisfied with: FWC benefit in widening methods of information seeking (73.0%), FWC role in providing relevant information (72.5%), and academic benefits of FWC (70.7%). Around two-thirds of the respondents are satisfied with: FWC role to facilitate virtual interaction (69.2%), overall implementation of the FWC (67.5%), and the services of the technical staff in solving problems (66.2%). Meanwhile, six in ten of the respondents are satisfied with the FWC's: reliability (65.2%), effectiveness (63.7%), availability (63.0%), and connection quality. On the whole, more than two-thirds of the respondents (67.2%) are considerably satisfied with the FWC (M=2.69, SD=0.59).

Table 4.8
Level of Satisfaction with the FWC

Statements	Level of Agreement*				M	SD	Overall %
	VD	D	S	VS			
I am satisfied with the availability of the free wireless connection (N=300).	12.0	31.0	50.0	7.0	2.52	0.79	63.0
I am satisfied with the reliability of the free wireless connection (N=300).	10.0	30.7	47.7	11.7	2.61	0.82	65.2
I am satisfied with the effectiveness of the free wireless connection (N=299).	10.0	34.4	45.5	10.0	2.55	0.80	63.7
I am satisfied with the connection quality of the free wireless connection (N=300).	13.0	38.0	42.0	7.0	2.43	0.80	60.7
I am satisfied with the academic benefits of the free wireless connection (N=300).	7.3	17.7	59.3	15.7	2.83	0.77	70.7
I am satisfied with the role of the free wireless connection in providing relevant information (N=299).	4.7	17.7	60.2	17.4	2.90	0.72	72.5
I am satisfied with the services rendered by the technical staff in solving problems regarding the free wireless connection (N=300).	8.3	30.3	49.3	12.0	2.65	0.79	66.2
I am satisfied with the role of the free wireless connection to facilitate virtual interaction (N=300).	5.7	20.3	64.7	9.3	2.77	0.68	69.2
I am satisfied with the benefit of the free wireless connection which widens the methods of information seeking (N=299).	5.4	15.7	60.2	18.7	2.92	0.74	73.0
I am satisfied with the overall implementation of the free wireless connection (N=300).	9.7	20.7	59.0	10.7	2.70	0.78	67.5
Total					2.69	0.59	67.2

*Scale: 1=Very Dissatisfied (VD), 2=Dissatisfied (D), 3=Satisfied (S), 4=Very Satisfied (VS)

The findings indicate that the students are satisfied towards the role of the Free Wireless Connection in providing them with academic information and as a new method for information seeking. However, the results also identify noticeable lower level of satisfactions related to the FWC's reliability, effectiveness, availability, and connection quality. Individual's evaluation on the innovation's benefits plays a significant role in determining acceptance factors and new adopters' behavior regarding new information technologies (Malhotra & Galletta, 1999). Smith (2004) said that users' perceived benefits on a new technology have a positive effect on the users' attitudes toward accepting the technology, which consequently triggers satisfaction. Haab (2007) found that individuals' experience with the technology relates to their level of satisfaction. These findings explain the students'

satisfaction level which could be affected by their needs as students, the benefits they perceived, and their considerably low experience in using the technology.

LEVEL OF SATISFACTION BASED ON GENDER, NATIONALITY, AND ACADEMIC DIVISION

There is a significant difference between the academic division on the level of satisfaction (t=2.537, p=0.012), where the respondents in IRK division (M=2.81) have higher level of satisfaction compared to the respondents in HS division (M=2.63). On the other hand, there are no significant differences between the gender (t=-0.084, p=0.933) and between the nationality (t=-1.415, p=0.160) on the level of satisfaction. Both male (M=2.69) and female (M=2.69) respondents are equally low in term of their level of satisfaction. Similarly, both Malaysian (M=2.67) and international (M=2.78) respondents are also having low level of satisfaction towards the FWC.

Table 4.9
Satisfaction between Gender, Nationality, and Academic Division

		N	M*	SD	t	df	p
Gender	Male	75	2.69	0.56	-0.084	295	0.933
	Female	222	2.69	0.60			
Nationality	Malaysian	233	2.67	0.61	-1.415	295	0.160
	International	64	2.78	0.48			
Division	IRK	100	2.81	0.58	2.537	295	0.012
	HS	197	2.63	0.58			

*Scale: 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree

HYPOTHESES TESTING RESULTS

The results of the hypotheses testing are as follows; main hypothesis 1 was partially supported, where sub-hypothesis 1.1 and sub-hypothesis 1.2 were not supported, sub-hypothesis 1.3 was supported. Furthermore, main hypothesis 2 was not supported, where sub-hypothesis 2.1, sub-hypothesis 2.2 and sub-hypothesis 2.3 was not supported.

CONCLUSION

With regards to the Internet usage, from a total of 300 students, 248 of them own personal computer and 136 of the owners have their computer connected to the Internet. More than one-third of the students are considered as experienced Internet users who have used it for more than six years. In term of their level of use, the students are considered to be medium-level users who spend at the average of four and a half hours a day on the Internet. In addition, almost two-thirds of the students use the Internet for seeking information.

As for the FWC usage, 240 students own laptop and 140 of them have their laptop registered for the FWC. Two-thirds of the students are considered as early adopters who have been using the FWC for less than three months. They are also regarded as medium-level users by spending three and a half hour on the FWC. The students also pointed out that free-of-charge service is their main benefit while weak connection line is their main problem using the FWC.

The study also found that there is no significant difference with regards to their gender, nationality, and academic division in relation to their level of FWC usage. It means the chosen demographic backgrounds are not the influencing factors for students' FWC adoption. However, the study found that there is a significant difference between academic divisions with regards to their satisfaction towards the implementation of the FWC. It means students with different academic background may influence their level of satisfaction towards the technology.

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